

What is claimed is:

- 1 1. A method for adaptively adjusting a DSL modem receiver in response to a high
2 amplitude downstream DSL signal, comprising:
3 determining whether the magnitude of the downstream DSL signal is above a
4 predetermined threshold;
5 decreasing an amount of gain of the DSL modem receiver if the amplitude of the
6 downstream DSL signal is above the predetermined threshold to prevent the receiver
7 from being saturated by the downstream DSL signal.
- 1 2. The method for adaptively adjusting a DSL modem receiver according to claim 1,
2 wherein the step of decreasing further comprises switching in additional resistance in a
3 receiver amplifier to decrease the gain of the receiver.
- 1 3. The method for adaptively adjusting a DSL modem receiver according to claim 1,
2 wherein the step of determining is performed by a digital signal processor.
- 1 4. The method for adaptively adjusting a DSL modem receiver according to claim 1,
2 further comprising the step of initially setting the gain of the first stage receiver at a
3 default gain.
- 1 5. The method for adaptively adjusting a DSL modem receiver according to claim 1
2 wherein the step of decreasing further comprises decreasing the receiver gain by 3 dB to
3 12 dB.

1 6. A method of adaptively adjusting a DSL modem having a receiver that includes
2 an amplifier circuit in response to a high amplitude downstream DSL signal, comprising:
3 determining whether the amplitude of the downstream DSL signal is above a
4 predetermined threshold; and
5 attenuating the downstream DSL signal before the downstream DSL signal enters
6 the amplifier circuit if the downstream DSL signal amplitude is above the predetermined
7 threshold.

1 7. The method of adaptively adjusting a DSL modem according to claim 6, wherein
2 the step of determining is performed by a digital signal processor and the step of
3 attenuating is performed by a loss circuit.

1 8. The method of adaptively adjusting a DSL modem according to claim 6, wherein
2 the step of attenuating further comprises inserting a loss of between 3 dB to 12 dB to the
3 downstream DSL signal amplitude.

1 9. The method of adaptively adjusting a DSL modem according to claim 6, wherein
2 the step of attenuating further comprises switching in a resistor to attenuate the
3 downstream DSL signal.

1 10. An automatically adjustable DSL modem for adaptively accommodating a high
2 amplitude downstream DSL signal, comprising:
3 a data processor for detecting the amplitude of the downstream DSL signal; and
4 a first stage receiver coupled to and controlled by the data processor;
5 the first stage receiver having an adjustable gain so that the data processor may
6 decrease the gain of the first stage receiver in response to detecting a high amplitude
7 downstream DSL signal.

1 11. The automatically adjustable DSL modem according to claim 10, wherein the first
2 stage receiver further comprises a pair of amplifier circuits, each amplifier circuit
3 including a switching device coupled to and controlled by the data processor for
4 selectively switching in additional resistance to decrease the gain of the amplifier circuit
5 in response to detection of a high amplitude downstream DSL signal.

1 12. The automatically adjustable DSL modem according to claim 10, further
2 comprising an analog front end including a hybrid and a receive filter, the first stage
3 receiver being disposed between the hybrid and the receive filter.

13. An automatically adjustable DSL modem for adaptively accommodating a high amplitude downstream DSL signal, comprising:
a data processor for detecting the amplitude of the downstream DSL signal; and
a loss circuit coupled to and controlled by the data processor for attenuating the downstream signal in response to the data processor detecting a high amplitude downstream DSL signal.

14. The automatically adjustable DSL modem according to claim 13, further comprising a first stage receiver having at least one amplifier circuit for amplifying the downstream DSL signal, the loss circuit being disposed within the first stage receiver to selectively attenuate the downstream DSL signal before the amplifier circuit amplifies the downstream DSL signal.

15. The automatically adjustable DSL modem according to claim 13, wherein the loss circuit further comprises a switching device coupled to a resistor, the switching device being coupled to and controlled by the data processor to switch in the resistor to selectively attenuate the downstream DSL signal.

1 16. A DSL modem for converting a downstream DSL analog signal to digital data
2 and for converting digital data to an analog signal, comprising:
3 a data processor for detecting the amplitude of the downstream analog signal, the
4 data processor being configured to determine whether the amplitude of the downstream
5 analog signal is greater than a predetermined threshold;
6 an analog front end coupled to and controlled by the data processor for receiving
7 the downstream analog signals;
8 the data processor being configured to adjust the analog front end according to
9 whether the amplitude of the downstream signal is greater than a predetermined threshold
10 to prevent the analog front end from being saturated by high amplitude downstream
11 signals.

1 17. The DSL modem according to claim 16 wherein the analog front end further
2 comprises a first stage receiver, the first stage receiver having an adjustable gain so that
3 the data processor may decrease the gain of the first stage receiver in response to
4 detecting a high amplitude downstream signal.

1 18. The DSL modem according to claim 16 further comprising a loss circuit coupled
2 to and controlled by the data processor for attenuating the downstream signal in response
3 to the data processor detecting a downstream signal greater than the predetermined
4 threshold.

1 ~~19.~~ A system for adaptively adjusting a DSL modem receiver in response to a high
2 amplitude downstream DSL signal, comprising:

3 means for determining whether the amplitude of the downstream DSL signal is
4 above a predetermined threshold;

5 means for decreasing an amount of gain of the DSL modem receiver if the
6 amplitude of the downstream DSL signal is above the predetermined threshold to prevent
7 a receiver amplifier from being saturated by the downstream DSL signal.

1 ~~20.~~ A system for adaptively adjusting a DSL modem having a receiver that includes
2 an amplifier circuit in response to a high amplitude downstream DSL signal, comprising:

3 means for determining whether the amplitude of the downstream DSL signal is
4 above a predetermined threshold; and

5 means for attenuating the downstream DSL signal before the downstream DSL
6 signal enters the amplifier circuit if the downstream DSL signal amplitude is above the
7 predetermined threshold.

1 ~~21.~~ A method for adaptively adjusting a DSL modem receiver in response to a high
2 amplitude downstream DSL signal, comprising:

3 measuring the amplitude of the downstream DSL signal;

4 adjusting an amount of gain of the DSL modem receiver according to the

5 measured amplitude to prevent the receiver from being saturated by the downstream DSL
6 signal.

- 1 22. A method for adaptively adjusting a DSL modem receiver in response to a high
2 amplitude downstream DSL signal, comprising:
3 measuring the amplitude of the downstream DSL signal;
4 selectively attenuating the downstream DSL signal before the downstream DSL
5 signal enters the amplifier circuit according to the measured amplitude of the downstream
6 DSL signal to prevent the downstream DSL signal from saturating the receiver.